Special Article

Pulmonary Alveolar Cell Carcinoma Revisited

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Abstract

A healthy looking 75-year-old man sought a consultation with the author, a retired chest physician, following the man's annual health examination, the report of which indicated that he had lung cancer. The author took him to a chest physician who carried out a series of investigations and diagnosed him as a case of pulmonary adenocarcinoma of the right lung. Thereafter, the patient received a full course of chemotherapy. Routine follow-up examinations of the case showed practically unchanged lesions over time and, apart from some psychological effects connected with knowing that he had cancer, the patient remained in normal health. The patient had been informed by the author at the time of his first consultation that he was actually a case of pulmonary alveolar cell carcinoma, which the author had reported in a paper 61 years ago.

Keywords: Pulmonary alveolar cell carcinoma, Bronchiolar carcinoma

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Introduction

In 1960, the author and colleagues at Siriraj Hospital Medical School, Mahidol University, reported three cases of pulmonary alveolar cell carcinoma.[1] Subsequently, only a few such patients have been encountered. This communication describes one such new case and provides an opportunity to revisit this type of carcinoma after the original cases were reported some 61 years ago.

The Patient (AS)

On November 29, 2019, a 75-year old man came to consult the author regarding the results of his annual health check-up on November 9, 2019. A chest radiograph showed diffuse small densities in both lung fields and a 5-cm opacity in the right upper lung area.

Note that, the patient had radiographs taken previously at a private hospital (HN. 151046177) on May 15, 2013 and December 22, 2016, which showed a mere faint shadow in the right upper lung area (Figures 1 and 2).

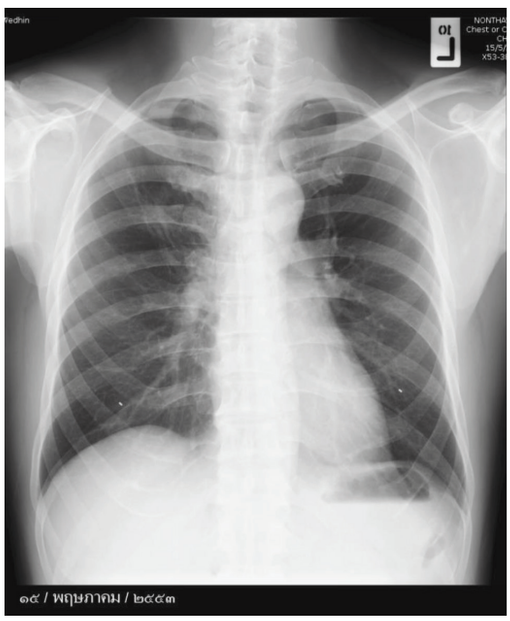


Figure 1 PA chest radiograph: May 15, 2010.

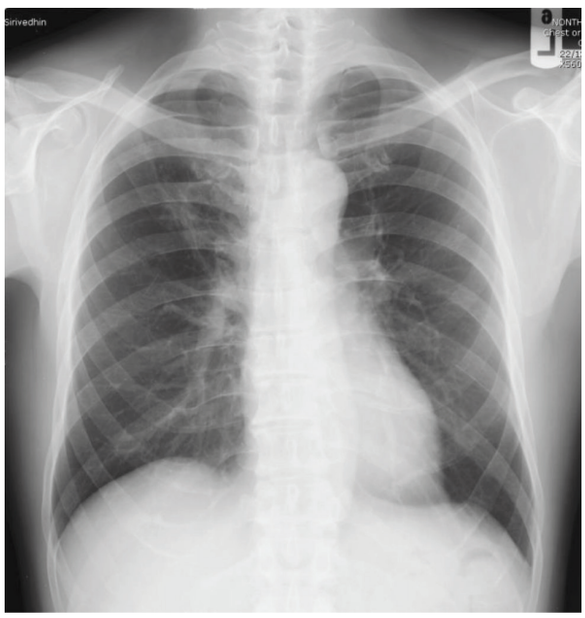
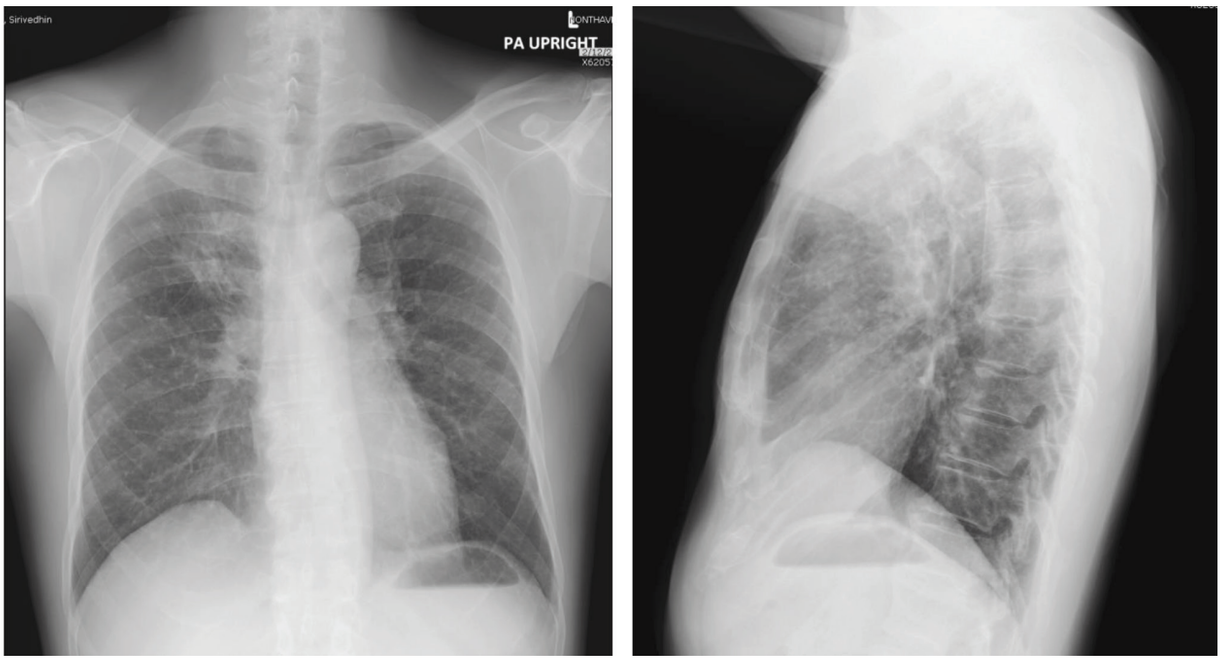


Figure 2 PA chest radiograph: December 22, 2013.

Follow-up chest radiographs (PA and R lateral views) taken at the same hospital on August 24, 2014 showed denser and larger right upper lung shadows (Figures 3(A) and (B)). Somehow, the condition was then noted as being a likely tuberculosis scar.



(A) (B)

Figure 3 (A) PA and (B) RL chest radiographs: August 24, 2014.

As for the patient's recent problem, the author took him to Siriraj Hospital (HN. 53609506), where a serial axial CT scan of the chest was performed on December 6, 2019. It revealed: (1) a speculated enhancing soft tissue mass with surrounding ground-glass opacity about 3.0 × 2.9 × 2.9 cm in (AP × W × H) diameter at the apical segment of the right upper lung lobe. Associated pleural tags were noted but with no definite invasion of surrounding organs; and (2) innumerable 0.6 - 0.7 cm pulmonary and subpleural nodules scattered throughout both lungs.

The radiological diagnosis was as follows: (1) primary lung cancer on top of the bronchiectatic area in the apical segment of the right upper lung with no definite invasion into surrounding organs; and (2) multiple hematogenous intrapulmonary metastases in both lungs.

Bronchoscopic biopsy of the right upper lung lobe (S19-27150) was performed on December 17, 2019; it yielded a microscopic picture of bronchial wall lung parenchyma with an invasive malignant glandular epithelium growth pattern on a desmoplastic background. Pathological diagnosis was adenocarcinoma.

A course of chemotherapy was then administered from January 14 to September 8, 2020. Apart from the usual chemotherapy side-effects, the patient's general condition was fair all along. Follow-ups with CT scans of the chest and whole body PET/CT showed little change of the radiographic picture of the chest per se. The impression was stable cancerous lung.

Details of the whole body PET/CT (F-18 FDG) performed on November 30, 2020 showed findings giving the impression of metabolically active primary lung cancer at the apical segment of the right upper lung with active pulmonary metastasis and active right lower paratracheal lymph node metastasis. The impression was active primary cancer at the apical segment of the right upper lung with lymphangitic carcinomatosis of both lungs and right paratracheal lymph node metastasis. Of note, the diagnosis at this time was changed from intrapulmonary hematogenous intrapumonary metastasis to lymphangitic carcinomatosis.

CT scan of the chest on May 16, 2021 compared with CT chest taken on February 21, 2021 showed unchanged primary lung cancer at the apical segment of the right upper lobe and no significant change of multiple bilateral intrapulmonary metastasis and lymphangitic carcinomatosis, and unchanged small right lower paratracheal nodes and right hilar nodes.

The patient completed the chemotherapy course on September 8, 2020. The whole body PET/CT (F-18FDG) study on August 9, 2021 showed no significant change in the hypermetabolic primary lung cancer at the apical segment of the right upper lung and lymphangitic carcinomatosis in both lungs; progression of bilateral multiple hypermetabolic pulmonary metastasis; and no significant change in right lower paratracheal lymphadenopathy.

Thereafter, the patient's general condition gradually and obviously improved. His only subjective complaint was getting tired easily after exercise, but on the whole, the patient's general appearance and activity improved strikingly day by day.

At the time of writing, the patient has survived almost two years from the onset of his illness. The most recent chest radiograph taken on October 28, 2021 showed practically unchanged intrapulmonary lesions (Figure 4), the finding of which is compatible with the author's opinion that the persisting symptoms of respiratory handicap were due to a lessening of the quantity of air entering into the pulmonary alveoli and consequently less oxygen entry from the lungs into the blood circulation by diffuse alveolar lesions. It is expected that the patient may live several years longer than if he had ordinary bronchogenic (lung) cancer.

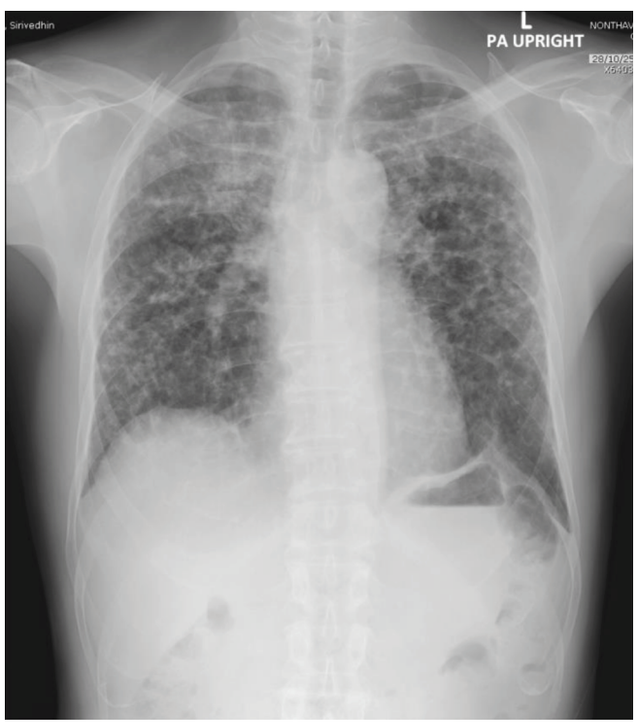


Figure 4 A chest radiograph taken on October 28, 2021 shows essentially the same picture as previously present or at most only very little larger.

Discussion

Pulmonary alveolar cell carcinoma or bronchiolar carcinoma, i.e. a group of pulmonary neoplasms originate in the lining cells of the alveoli or the bronchioles,[2,3] is a rare entity in terms of lung cancer. A patient's life-span is longer than it would be with the more common type of lung cancer. Pulmonary alveolar cell carcinoma is a type of lung cancer seldom thought of, and it tends to be not reported in the literature.

Our first three patients[1] presented radiographic pictures of lung lesions almost like that of acute military tuberculosis or lymphangitis carcinomatosa, the same as had been presented in the

present patient. Differential diagnosis can be made by being clinically alert.[4-6]

Acknowledgement

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References

1. Bovornkitti S, Kangsadal P, Karnchanakunchorn S, Tandhanand S. Pulmonary 'alveolar cell' (Brochiolar) carcinoma. Report of Three Cases in Thailand. *Tubercle Lond.* 1960;41:268-271.
2. Delarue NC, Graham EA. Alveolar Cell Carcinoma of the Lung (Pulmonary Adenomatosis, Jagziekte? A Multicentric Tumor of Epithelial Origin). *J Thorac Surg.* 1949;18:237-251.
3. McCoy HI. "Alveolar-Cell" Carcinoma of The Lung. *Ann Intern Med.* 1951;34:968-982.
4. Hajdu SI. The Story of Bronchioloalveolar Carcinoma. *Ann Clin Lab Sci.* 2005;35(3): 336-338.
5. Houser S, Balis UJ, Mark EJ. Lung Pathology. *A Consultative Atlas*. Totowa: New Jersey Humana Press Inc; 2005:07512.
6. Liebow AA. Bronchiolo-alveolar carcinoma. *Adv Intern Med.* 1960;10:329-358.